



iPhone SE Teardown

Teardown of the iPhone SE on March 31, 2016.

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INTRODUCTION

iPhone mini? iPhone 5se? 5s Plus? After a rather long rumor cycle, we finally have our hands on the new iPhone SE. Billed as a 5s with better specs, we're excited to see the perfect union of existing Apple tech in a new body. Kinda like Taco Bell—same ingredients, new menu item. Let's open it up and spill the beans!

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[video: <https://www.youtube.com/watch?v=Bl-KEkgAMiA>]



TOOLS:

- [P2 Pentalobe Screwdriver iPhone](#) (1)
 - [iSclack](#) (1)
 - [iFixit Opening Tools](#) (1)
 - [Spudger](#) (1)
 - [Tweezers](#) (1)
 - [Phillips #000 Screwdriver](#) (1)
 - [Suction Handle](#) (1)
 - [1.5 mm Flathead Screwdriver](#) (1)
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Step 1 — iPhone SE Teardown



- Out with the old, and in with the new—hardware, that is. Here's the skinny on what's hiding behind that oh-so-familiar face:
 - Apple A9 processor with embedded M9 motion coprocessor
 - 16 or 64 GB of storage
 - 4-inch, 1136 x 640 pixels (326 ppi) Retina display
 - 12 MP iSight camera supporting 4K video recording with 1.22 μ pixels, and a 1.2 MP $f/2.4$ FaceTime HD camera
 - 802.11a/b/g/n/ac Wi-Fi + Bluetooth 4.2 + NFC + 19-band LTE
 - Touch ID sensor supporting user authentication and Apple Pay

Step 2



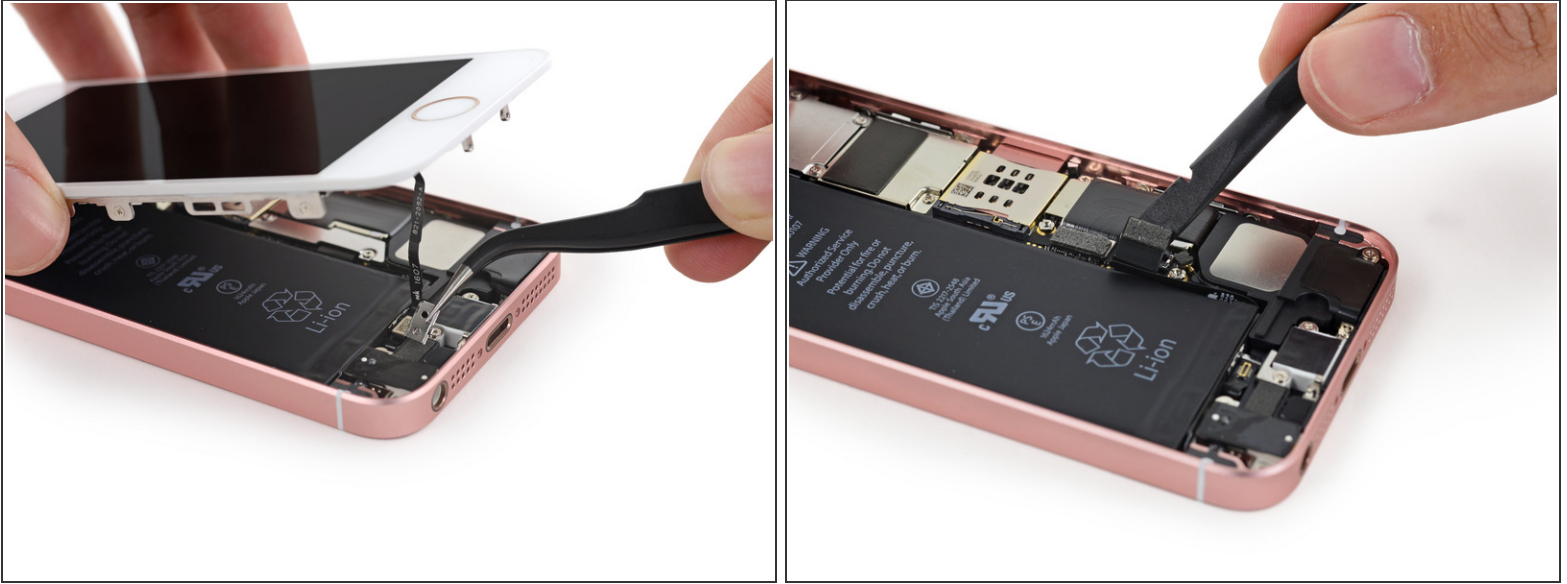
- Shifting our attention to the rose gold rear case, we spot the model number— A1662, never before seen in the wild.
- Colors notwithstanding, in a side-by-side comparison, the SE is nearly indistinguishable from its predecessor.
 - ⓘ We're not surprised. While the SE represents a substantial performance boost over the 5s, they have the same display and Touch ID sensor, and identical physical dimensions.
- One new feature we *can* spot is the matte chamfered edges around the display.

Step 3



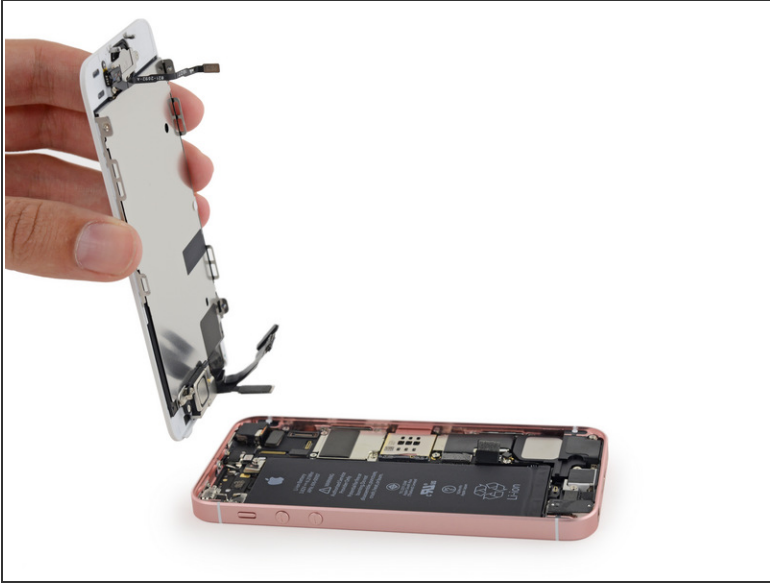
- Now for the step we don't like. Pentalobes: a five-pointed reminder that Apple doesn't *really* want you opening up *your* device.
 - *Still, these pentalobes are totally cute and come in a matching rose gold.*
- Setting the pretty pink screws aside, we [iSclack](#) the top off—and there's no pesky, color-matching display adhesive in sight. Compared to Apple's [S-series flagships](#), this opening procedure is a snap.
- ① We had [speculated](#) that the display gasketing in the 6s and 6s Plus was added for water resistance or structural reinforcement supporting 3D Touch. Its absence from this model and some preliminary [tests](#) suggests it's the latter.

Step 4



- Just like in the [iPhone 5s](#), lurking beneath the display of the SE we find the familiar Touch ID cable [booby trap](#).
 - ⓘ For those not in the know, this cable adds a small element of danger to disassembly, as pulling up the display too far without first removing the bracket and disconnecting the cable could cause accidental damage to the cable.
- We're itching to do some comparisons and parts testing—but, safety first. Let's disconnect that battery!

Step 5



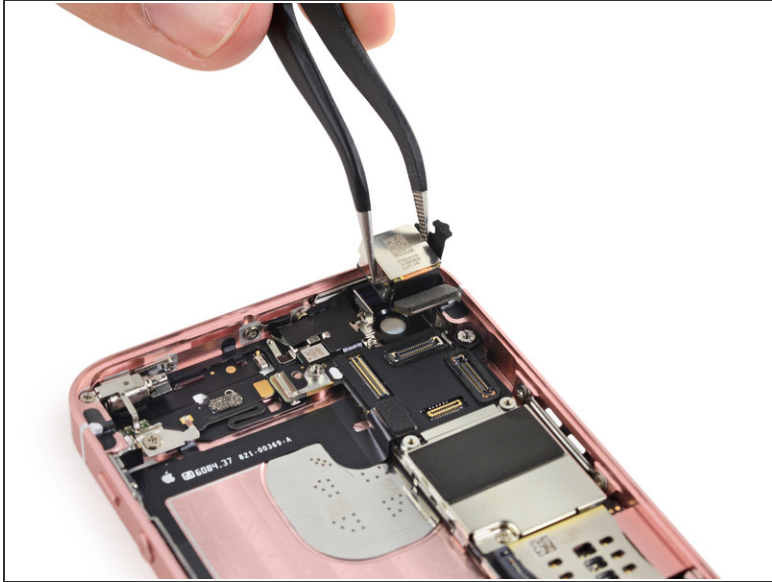
- Off pops the display assembly!
- A side-by-side comparison of displays out of the 5s (left) and SE (right) reveals... they're pretty much identical!
- ① The similarities are more than skin deep. After a little testing, we found the 5s display is plug-and-play in the SE—fitment, connectors, and functionality are the same. It fires right up. That means [replacement parts](#) and [guides](#) are already available!

Step 6



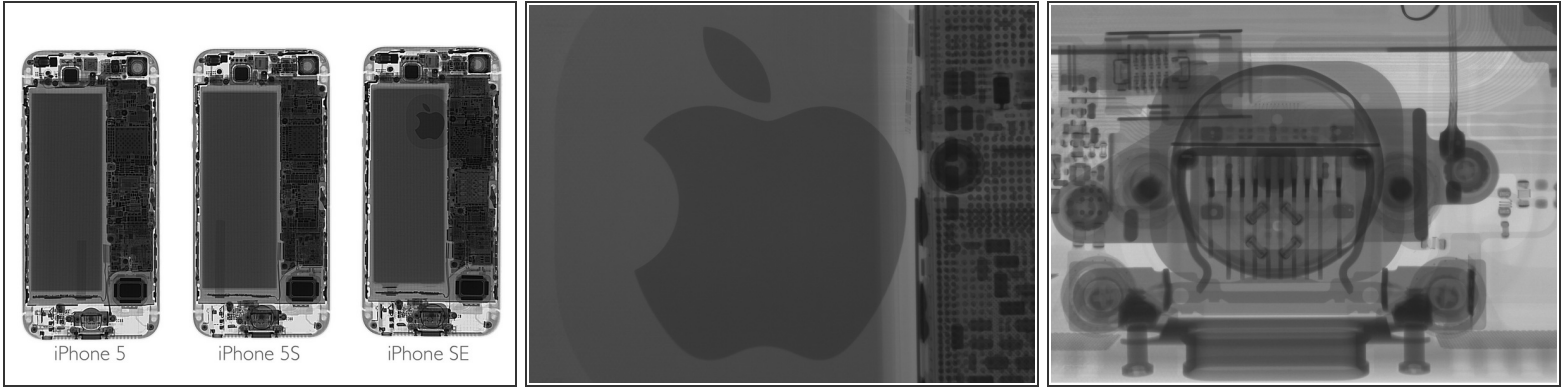
- No need to repeat the [mistakes of the past](#)—we've mastered these handy battery tabs!
- The Li-ion battery in the iPhone SE comes in at 3.82 V, 6.21 Whr, and 1624 mAh. This offers a minor (but notable) capacity increase from the [1560 mAh](#) cell in the 5s.
- ❗ Though it's not quite as capacious as the [1715 mAh](#) cell found in the larger (and more power-hungry) iPhone 6s, Apple states this battery will provide up to 10 days of standby, 14 hours of talk time, and 13 hours of video playback.
- 🔧 Despite the apparently interchangeable displays, the SE's battery connector differs from that of the 5s. So, no chance to supercharge your old 5s, unfortunately.

Step 7



- Next up, we pluck the upgraded rear-facing camera from its berth.
- While it looks pretty similar to the one in the 5s (left), the SE's camera (right) has far fewer pins on its connector.
 - ⓘ Do you think those extra megapixels ever get stuck in connector traffic?
- The SE's iSight camera gets a resolution bump up to 12 MP, but a decrease in pixel pitch down to 1.22 μ m from the 1.5 μ m pitch in the 5s.
- ⓘ Since these are the exact same specs as the [main camera](#) in the iPhone 6s, we'd hoped the cameras might be interchangeable—but alas, our hopes of creating a complete Apple Frankenphone might be overreaching.

Step 8



- We interrupt this teardown to bring you: more [cowbell](#) teardown!
- Our friends at [Creative Electron](#) have been getting their teardown on, X-ray style!
- We have for your enjoyment, three generations of iPhone 5 configurations.
- Really, the only obvious change is the addition of the bi-metal Apple logo.
- That, and the addition of the Touch ID cable between the 5 and 5s (unfortunate placement still intact in the SE, too).

Step 9

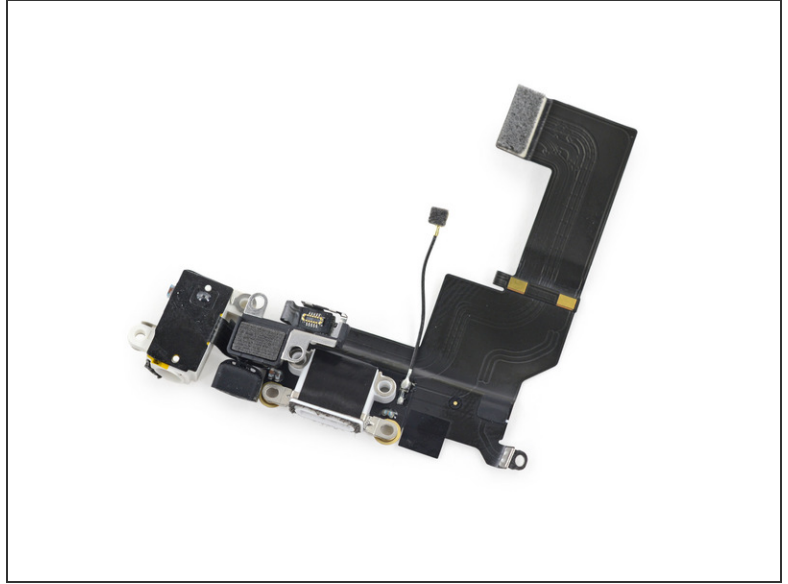


- Out speaker assembly, out vibrator, out SIM card and tray!

✦ Our testing confirms all these bits are interchangeable with their counterparts from the 5s—same form, same function. They bolt right up, and they work like a charm. Neat!

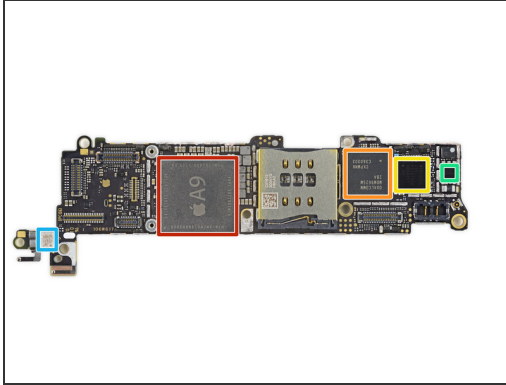
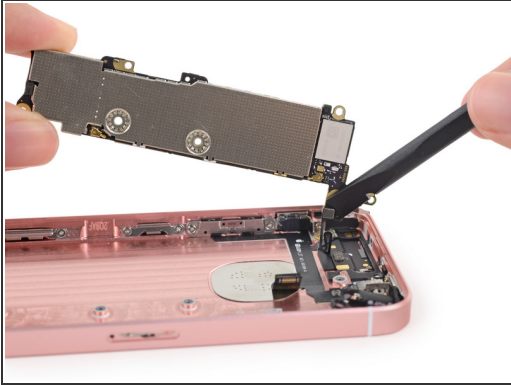
- Rose gold remains SE exclusive though, so you may need to upgrade for proper color coordination.
- Also of note: waterproof seals! There be [foamy silicone seals](#) surrounding *some*—but, mysteriously, not all—of the logic board connections.
- ⓘ The front camera, volume controls, and rear camera connectors all get the fancy waterproofing treatment, while the LCD, digitizer, battery, and Lightning connector assembly all seemingly go without.

Step 10



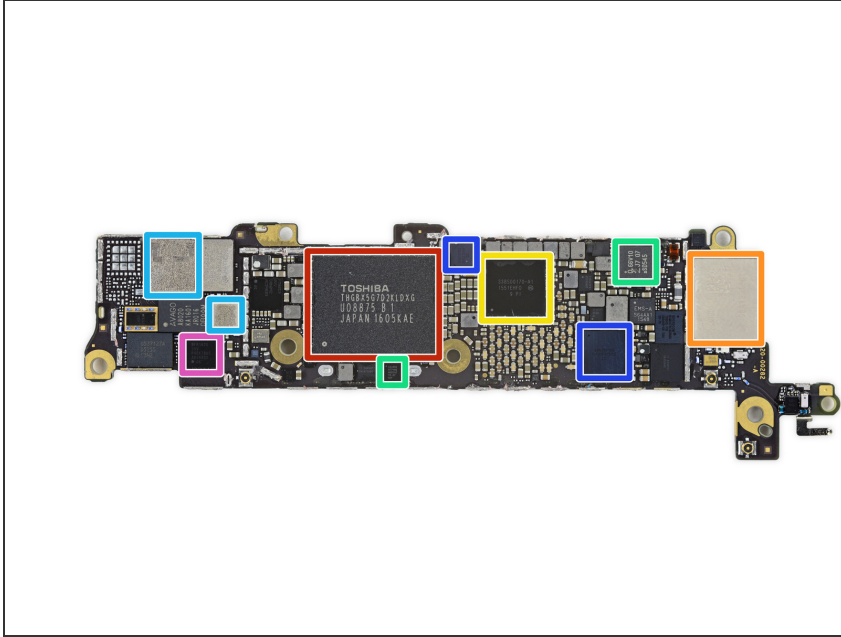
- We finally wrestle the Lightning connector assembly out of the ~~5s~~ SE.
- It looks *just* like the [5s assembly](#), but the connectors are a smidge different; we couldn't get a 5s/SE swap to work out.
- ❗ Maybe a change to allow for USB 3.0? Speculation welcome.

Step 11



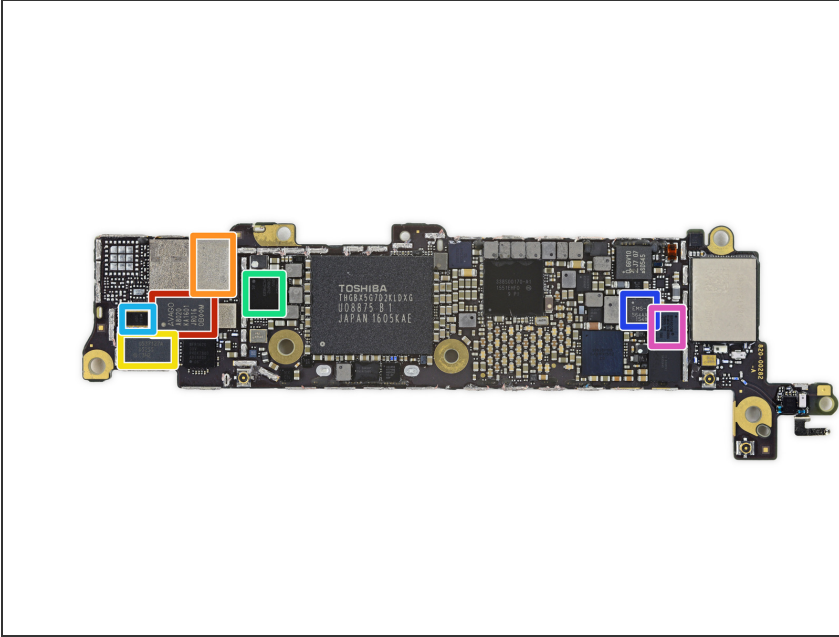
- We pop the pesky rear connector off the logic board, and are free to scan the silicon fields of glory!
 - Apple A9 [APL1022](#) SoC + SK Hynix 2 GB LPDDR4 RAM as denoted by the markings H9KNNNBTUMUMR-NLH
 - Qualcomm [MDM9625M](#) LTE Modem (as seen in iPhone 6/6 Plus)
 - Qualcomm [WTR1625L](#) RF Transceiver (as seen in iPhone 6/6 Plus)
 - Qualcomm [QFE1100](#) Envelope Tracking IC (as seen in 6s/6s Plus, and 6/6 Plus)
 - Skyworks [SKY77611](#) Quad-band Power Amplifier Module
- ✦ We'd like to extend a huge thanks to our friends at [Chipworks](#) for helping us ID all of these chips! Check out their [rad teardown](#) of the iPhone SE for even more silicon goodness.

Step 12



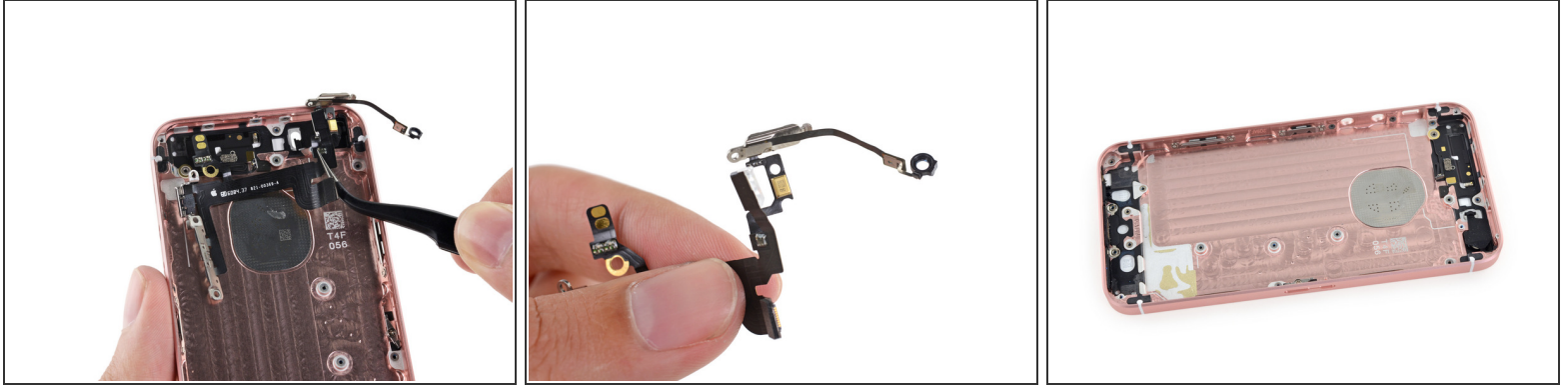
- There's even more silicon goodies on the reverse!
- Toshiba THGBX5G7D2KLDXG 16 GB NAND Flash
- 339S00134 (likely an iteration of the Universal Scientific Industrial [339S00043](#) Wi-Fi module)
- Apple/Dialog 338S00170 Power Management IC
- NXP [66V10](#) NFC Controller and 1610A3 Charging IC (as seen in iPhone 6s/6s Plus)
- Skyworks SKY77826 Ultra low-band Power Amplifier Duplexer and [SKY77357](#) 2G/EDGE Power Amplifier Module (likely an iteration of [SKY77336](#))
- Apple/Cirrus Logic 338S00105 and [338S1285](#) Audio ICs (as seen in iPhone 6s/6s Plus)
- Qualcomm [WFR1620](#) Receive-only Transceiver (as seen in iPhone 6/6 Plus)

Step 13



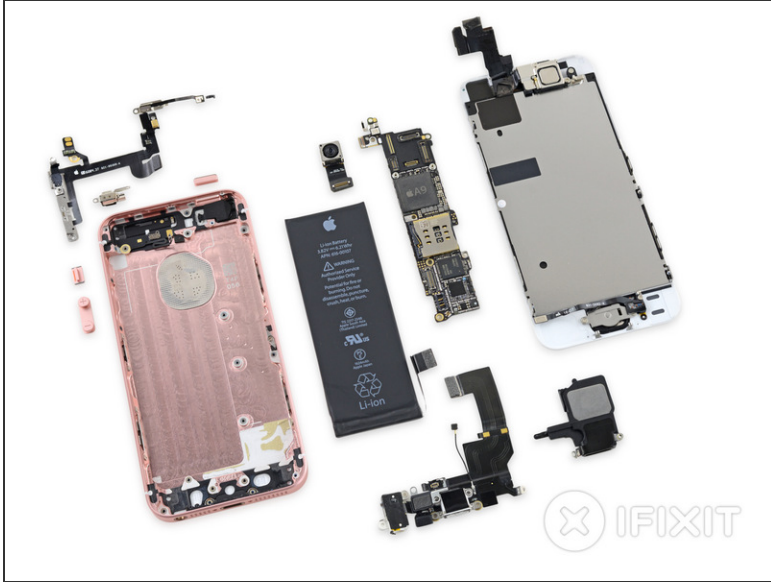
- Chip identification continued...
- Avago [ACPM-8020](#) Mid-band Power Amplifier Duplexer (as seen in iPhone 6 Plus)
- Qorvo (TriQuint) [TQF6410](#) Low-band Power Amplifier Duplexer (as seen in iPhone 6 Plus)
- TDK EPCOS D5255 Diversity Receive Module
- Qualcomm [PM8019](#) PMIC (as seen in iPhone 6/6 Plus)
- Qorvo (RF Micro Devices) [RF5159](#) Antenna Switch Module (as seen in iPhone 6/6 Plus)
- InvenSense [EMS-A](#) 6-axis Gyroscope and Accelerometer Combo
- Broadcom [BCM5976](#) Touchscreen Controller (first seen in iPhone 5)

Step 14



- Whoa, now—looks like the button cable got a little more complicated since [last time](#).
- The power button bracket now has some kind of contact cable doohickey, instead of a simple clip, potentially for grounding.
- With that, we're down to the rear case—time to wrap this teardown up!

Step 15



- iPhone SE Repairability: **6 out of 10** (10 is easiest to repair)
 - The display assembly is the first component out of the phone, simplifying screen replacements.
 - The battery is fairly easy to access, even though it's not technically "user replaceable."
 - The Touch ID cable could be easily ripped out of its socket if a user is not careful when opening the phone.
 - The iPhone SE still uses Pentalobe screws on the exterior, making it difficult to open without specialized tools.
- ⓘ The hardest part of any repair is knowing what to do. Thanks to the similarities to the 5s and our repair guides, repairs on the SE are already excellently documented—[check it out](#).

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